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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	ET Docket No. 93-59
Amendment of Section 2.106	)	RM-8092
of the Commission's Rules to	)	
Allocate Spectrum for	)	
Wind Profiler Radar Systems	)	

COMMENTS OF PINPOINT COMMUNICATIONS, INC.

PINPOINT COMMUNICATIONS, INC.

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Dated: June 15, 1993

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Pinpoint Communications, Inc. ("Pinpoint"), by its attorneys, hereby comments on the above-captioned Notice of Proposed Rule Making and Notice of Inquiry.[1] In its NOI, the Commission requests information on the proposal of Radian Corporation ("Radian") to allocate spectrum at 915 MHz for Wind Profiler Radar Systems ("WPRS" or "wind profilers").[2] The Commission seeks information on the technical compatibility of wind profilers with existing and prospective Automatic Vehicle Monitoring ("AVM") systems, as well as with other users of the 902-928 MHz band.[3]

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[1] In the Matter of Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum for Wind Profiler Radar Systems, 8 FCC Rcd 2546 (1993) (Notice of Proposed Rule Making and Notice of Inquiry) (hereinafter "Notice of Inquiry" or "NOI"). Pinpoint's comments respond primarily to the Commission's NOI.

[2] See Petition for Rulemaking of Radian Corporation for Allocation of Two MHz in the 914-916 MHz Band for the Co-Secondary Use of Wind Profiler Radar Systems, RM-8092, filed August 13, 1992 (hereinafter "Petition"); Reply Comments and Amended Petition for Rulemaking of Radian Corporation for Allocation of Two MHz in the 915 MHz Band for the Co-Secondary Use of Wind Profiler Radar Systems, RM-8092, filed December 17, 1992 (hereinafter "Amended Petition").

[3] See Notice of Inquiry, 8 FCC Rcd at 2549.

I. SUMMARY

Wind profiling operations at 915 MHz, as proposed by Radian, may cause harmful interference to existing users of the 902-928 MHz band, including providers of AVM. The dearth of technical data in Radian's petition, however, precludes a meaningful and conclusive

The 902-928 MHz band within which Radian requests an allocation for WPRS is characterized by intensive sharing and coordination among various services. In order of priority, the band is used for: Industrial Scientific and Medical (ISM) equipment on a primary basis for certain medical and industrial purposes;[5] radiolocation services on a primary basis for Government use;[6] non-government AVM systems operations on a secondary basis to ISM and government radiolocation;[7] amateur radio service on a secondary basis to AVM and the other uses;[8] and unlicensed uses on a non-interference basis under Part 15 of the Commission's rules.[9] Thus, under this allocation scheme, there are three services operating within the 902-928 MHz band that are primary to amateur radio -- the service with which Radian seeks co-secondary status.

Although AVM systems are currently authorized to use only 903-912 MHz and 918-927 MHz,[10] the Commission is currently considering licensing AVM systems throughout the 902-928 MHz band.[11] Given the rapid growth of AVM technology and the

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5 47 C.F.R. § 18.305(a) (1992).

6 47 C.F.R. § 2.106 (1992).

7 47 C.F.R. § 90.239 (1992).

8 47 C.F.R. § 97.301(a) (1992).

9 See 47 C.F.R. §§15.243-.249 (1992). See also 47 C.F.R. § 15.5 (1992) (specifying non-interference conditions).

10 Some AVM use of the 912-918 MHz sub-band occurs on a waiver basis and 903-904 and 926-927 MHz are available on a developmental basis.

11 See Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic 16 Vehicle Monitoring Systems, 8 FCC Rcd 2502 (1993) (Notice of Proposed Rule Making) (hereinafter "AVM NPRM").

increased demand for AVM services, this proposal to open the entire band to AVM is widely supported.[12]

In its Petition, Radian asserted that its system will not cause interference to the other users of the 902-928 MHz band.[13] AVM system manufacturers and other users of the spectrum have challenged this claim in their comments on the Petition.[14] These commenters unanimously agreed that while the Petition lacks sufficient technical information to permit a meaningful interference analysis, the information Radian does provide strongly suggested that an allocation centered at 915 MHz for WPRS may not be compatible with other uses of the spectrum. Several commenters also requested that the Commission consider an allocation for

Commission's NOI requests comment on the implications of this proposed allocation on AVM systems and other uses of the band.[17]

III. STATEMENT OF INTEREST

Pinpoint, a Texas corporation headquartered in Dallas, is one of a growing number of companies that have applied for AVM systems within the 902-928 MHz band. Pinpoint seeks to operate ARRAY™, a wideband pulse-ranging AVM system using long-range hyperbolic multilateration (HML), which accurately locates vehicles and provides vehicle related two-way data communications.[18] A high capacity, robust system, ARRAY™ is designed to share spectrum with other AVM systems, as well as government radiolocation systems, ISM equipment, and a large number of Part 15 radio frequency devices that operate in the 902-928 MHz band. Because its position-fixing and data communications functions operate within the same signal, ARRAY™ is unique among existing and developing AVM systems.

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[17] Id.

[18] Earlier this year, Pinpoint applied for AVM licenses in twenty cities to establish its initial operations. The applications are still pending. See File Nos. 347483-347502.

In addition to vehicle location, the AVM capabilities of ARRAY™ will provide a platform for a variety of AVM services, including computer assisted dispatch for business and public safety agencies, automobile road service assistance, computer assisted navigation along streets and highways, and business location identification services.[19]

In addition to business and public safety applications, ARRAY™ will further important national transportation policies established by the Intelligent Vehicle-Highway Systems Act of 1991 ("IVHS"), which mandates the development, operational testing, and implementation of intelligent vehicle-highway systems.[20] ARRAY will realize such important components of IVHS as advanced traffic management systems, enhanced traveler information systems, commercial vehicle operations, and advanced public transportation systems. In proposing to permit AVM operations throughout the 902-928 MHz band, the Commission has acknowledged the importance of AVM to intelligent highway systems and the public interest benefits resulting from a permanent AVM allocation.[21]

Given the scope of Pinpoint's intended operations, it clearly has a vital interest in any potential use of the 902-928 MHz band, such as wind profiling.

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[19] With its positioning capabilities, automatic distress signal functions, and high speed data communications, ARRAY™ will prove particularly valuable in emergency situations. Through dashboard mounted terminals, drivers using ARRAY™ not only could request automatic routing information to guide them on unfamiliar roads, but also could send and receive location related messages that would enable them to seek emergency assistance from police, medical personnel, and auto repair and towing services without leaving their cars, knowing their vehicles' locations, or having to seek the aid of strangers.

[20] See Pub. L. No. 102-240, § 6052, 105 Stat. 2189, codified at 23 U.S.C. § 307 note (Supp. III 1991).

[21] See AVM NPRM, 8 FCC Rcd at 2505.

IV. ARGUMENT

The technical information currently before the Commission on WPRS in the 902-928 MHz band is limited to that provided by Radian. Albeit insufficient for conclusive analysis, it strongly suggests that wind profiling systems may cause unacceptable interference to existing and prospective users throughout much of the 902-928 MHz band. Radian's assertions that its wind profiler system will not cause interference are largely conclusory. Thus, as discussed below, additional technical data is necessary before the Commission and the public can evaluate an allocation for WPRS within the 902-928 MHz band.

A. WPRS Would Appear to Pose a Significant Risk of Interference to AVM Systems and Other Users of the 902-928 MHz Band.

Because the Radian Petition lacks even elementary technical parameters, the potential interference wind profilers poses to other users of the 902-928 MHz band cannot be assessed meaningfully. That is, Radian has not yet indicated exactly the level of interference its system would cause to the other users of the 902-928 MHz band. Notwithstanding the dearth of specific technical information, however, the Radian Petition contains evidence strongly suggesting that wind profiler operations centered at 915 MHz may cause substantial interference problems to users throughout the 902-928 MHz band. Thus, WPRS could threaten the viability of AVM systems operating under the Commission's interim AVM rules,

as well as prospective AVM systems that would operate throughout the 902-928 MHz band pursuant to the Commission's permanent AVM allocation proposal.[22]

There are indications in the Radian Petition that wind profilers may cause harmful interference throughout the 902-928 MHz band.[23] For example, despite Radian's contention that side lobe emissions are low because WPRS directs RF energy within a narrow cone 15-20° from the zenith,[24] the Petition implies the likelihood for undesirable levels of side lobe signal energy. Specifically, Radian's Petition indicates that the peak vertical power of its system is 86 dBm, and that side lobe suppression with fences reduce horizontal energy by approximately -45 dB. Based on these technical characteristics, Pinpoint calculates the residual horizontal EIRP of 41 dBm.[25] Side lobe signal energy of this magnitude may pose a serious interference problem for the users of the 902-928 MHz band. Indeed, given that

In addition to harmful side lobe emissions, the Petition raises the possibility of significant spillover energy outside the 12.5 MHz allocation Radian seeks. As the parameters set forth in Radian's Petition demonstrate, the -20dB emission bandwidth for one portable 915 MHz wind profiler system design is 40 MHz.[26] Although this is not necessarily identical to the spectrum profile of a Radian portable unit, Radian has failed to provide such information for its equipment. It would appear therefore that proposed wind profiler radars may use substantially greater bandwidth than the 12.5 MHz allocation Radian seeks, thus increasing the apparent likelihood of potential interference.

Finally, the Commission's Notice of Proposed Rulemaking to allocate 449 MHz for wind profilers, which accompanies the NOI, acknowledges a substantial likelihood for channel interference to adjacent users, such as Remote Pickup Broadcast Stations and Private Land Mobile Radio Services.[27] The projected interference impact of wind profilers at 449 MHz further validates concerns over the prospect for unacceptable interference to other users of the 902-928 MHz band.

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[26] See Appendix I to the Petition. See also Comments of Amtech at 7; Reply Comments of Hughes at 4.

[27] Notice of Proposed Rulemaking, 8 FCC Rcd at 2548.

B. Radian's Claim That WPRS Will Not Cause Harmful Interference Is Unsubstantiated and Based on Faulty Reasoning.

In its Petition and Amended Petition, Radian asserts that WPRS will not cause harmful interference to existing users of the 902-928 MHz band.[28] Despite these assertions, however, there is no reliable indication that Radian can protect other users of the same and adjacent spectrum frequencies from interfering signals created by WPRS.

For example, Radian indicates that WPRS will use perimeter fencing to confine

Moreover, as the Radian Petition acknowledges, the effectiveness of perimeter fencing depends upon the placement of WPRS operations in "isolated, unpopulated areas."[31] Reorienting the wind profiler antenna to direct horizontal energy emissions away from any other users, another protective measure advanced by Radian, is also only effective in areas sparsely populated with radio stations.[32] The Petition, however, indicates that Radian plans to locate wind profilers near areas likely to be served by AVM applications, such as airports. Thus, even if the protective measures proposed by Radian actually could guard against disabling interference -- which Radian has failed to demonstrate -- their efficacy would be undermined by Radian's operational plans.

Radian also asserts that because harmful interference from experimental use of the 915 MHz frequencies has not been reported, its proposed system should not cause interference.[33] This fact affords little comfort given that wind profiler operations at 915 MHz have been experimental, limited in scope, and confined mostly to rural areas. In contrast, Radian's proposal seeks to establish a wide-scale, fully operational wind profiler service operating in locations that include densely populated areas. In projecting limited interference based on experimental use of 915 MHz, Radian also fails to factor in the projected growth of AVM systems operating in the 902-928 MHz band, particularly if the entire band is made available to such use, as the Commission proposes.

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31 Petition at 8.

32 See, e.g., Amtech at 9-10.

33 Amended Petition at 7.

In short, not only has Radian failed to provide rudimentary technical and operational characteristics of its proposed wind profiler system, but it also has failed to explain convincingly how its proposal will avoid causing harmful interference to existing primary and co-secondary users of the band.

C. Wind Profilers Must Provide a More Complete Technical Description of WPRS.

It is beyond dispute that additional technical information is necessary to evaluate the

Second, the Commission should request an interference analysis of WPRS at various distances and at various altitudes (implying a dynamic range radiation pattern for the antenna array). This analysis will indicate peak interference levels (e.g. in dBi) at varying distances from the wind profiler antenna site, both at ground level and at typical base station elevations (i.e. 50-500 feet). This analysis is critical to an assessment of potential interference because it would allow Pinpoint to determine at what distance and at what altitude signals used by an ARRAY™ mobile unit would be incapacitated by the Radian wind profiler system.

Based on the serious deficiency of pertinent technical information, the FCC should delay consideration of the Petition until Radian or other WPRS advocates provide technical information, such as that specified above, which is necessary to conduct effective interference analyses for a WPRS allocation at 915 MHz. Moreover, because Radian's Petition and the Commission's Notice of Proposed Rulemaking to adopt permanent AVM rules concern the allocation and use of the same frequency band, the Commission should not consider an allocation for WPRS at 915 MHz until after it has adopted a final AVM allocation.

V. CONCLUSION

The Radian Petition raises many unanswered questions about the interference potential of WPRS, and fails to alleviate concerns raised by other users of the band. These concerns cannot be addressed without a more complete technical description of the wind profiler service. Therefore, the Commission should require Radian or other proponents of WPRS at

915 MHz to provide a fuller description of the contemplated operations. The Commission should also delay consideration of a 900 MHz allocation for WPRS until after it adopts a permanent AVM allocation.

Respectfully submitted,

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Dated: June 15, 1993

DECLARATION OF LOUIS H.M. JANDRELL

My name is Louis H.M. Jandrell. I have a Bachelor of Science degree in Electrical Engineering from the University of Witwatersrand, Johannesburg, South Africa.

I am currently Vice President of Design and Development of Pinpoint Communications, Inc., a Texas corporation, which I co-founded in 1990. I am also the President of Idea Matrix, Inc., a Texas company, which I founded as The Matrix Company in 1984. Idea Matrix, Inc. provides consulting services in many areas of radio communications and electronic product design and development. Before 1984, I served as Product Development Manager of Astec Electronics for one year in Santa Clara, California, and Hong Kong, as New Product Development Manager at Sunflex Company for two years in San Rafael, California, and as an electrical engineer specializing in industrial systems engineering for several other companies from 1965 to 1981.

I hereby declare that I am technically qualified to be responsible for the technical information submitted in the attached Comments of Pinpoint Communications, Inc., and that the information presented in the attached Comments is complete and accurate to the best of my knowledge.

Dated this 10 th day of June, 1993

By: 

Louis H.M. Jandrell

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing Comments of Pinpoint Communications, Inc. was delivered by first class mail, postage prepaid, on June 15, 1993 to:

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